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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,282	12/28/2001	David W. Boertjes	71493-949 / ala	3125

42534 7590 10/04/2006

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EXAMINER	
LEUNG, CHRISTINA Y	
ART UNIT	**PAPER NUMBER**
2613	

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/029,282	Applicant(s) BOERTJES ET AL.	
	Examiner Christina Y. Leung	Art Unit 2613	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2006 and 15 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,7-15,17-19,23-27 and 29-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,7-15,17-19,23-27 and 29-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 14 August 2006 has been entered.

Oath/Declaration

2. The declaration filed on 14 August 2006 under 37 CFR 1.131 is sufficient to overcome the Hajjar et al. (US 6,344,912 B1) reference.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 7, 12-15, 17, 19, 24, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao (US 6,169,616 B1) in view of Danagher et al. (US 5,959,749 A).

Regarding claim 1, Cao discloses a method of implementing programmable optical add/drop multiplexing (Figures 3A, 3B, and 5), the method comprising:

demultiplexing a respective input WDM (wavelength division multiplexed) optical signal into a plurality of optical path signals each comprising at least one channel (using WDM MUX/DEMUX 320 in add/drop module 10; Figure 3B; column 4, lines 16-57);

performing an add/drop function of selected ones of the optical path signals and establishing through paths of remaining ones of the optical path signals (using switch matrix module 30 (column 3, lines 55-67; column 5, lines 39-67; column 6, lines 1-44);

multiplexing, a plurality of optical path signals into an output WDM optical signal (using WDM MUX/DEMUX 320 in the other add/drop module 20); and

performing chromatic dispersion compensation and amplitude compensation wherein a respective at least one of chromatic dispersion and amplitude of the output WDM optical signal is independent of the add/drop function and corresponds to a target value (using dispersion compensator 310, dispersion compensating fiber 330-1...n, and amplifier 305; Figure 3B; column 4, lines 19-39).

Cao does not specifically disclose demultiplexing and multiplexing a respective WDM optical signal for "each one of N optical systems." However, larger optical networks including multiple WDM signals (each comprising multiple channels) are well known in the art. Furthermore, Danagher et al. teach a programmable optical add/drop multiplexing method (Figure 4) that is related to the one disclosed by Cao, including:

demultiplexing WDM signals into a plurality of path signals each comprising at least one channel (using bidirectional optical multiplexers 402 in a demultiplexing direction; column 8, lines 11-14);

performing an add/drop function of selected ones of the path signals and establishing through paths of the remaining path signals (using 8 x 8 switching fabric 408; column 8, lines 20-31); and

multiplexing a plurality of path signals into output WDM signals (using bidirectional optical multiplexers 402 in a multiplexing direction).

Danagher et al. particularly teach demultiplexing and multiplexing a respective WDM optical signal for each one of N optical systems by using a plurality of the demultiplexing/ multiplexing elements 402 accordingly.

It would have been obvious to a person of ordinary skill in the art to include more than one input and output WDM signal (and more than one optical system) as taught by Danagher et al. in the method disclosed by Cao in order to process greater amounts of data on multiple incoming and outgoing fibers/optical systems in a large optical network.

Regarding claim 12, Cao discloses performing amplitude compensation (using amplifier 305 and variable attenuators 335-1...n), wherein for the output WDM optical signal of the optical system, the power corresponds to target values which are suitable for transmission requirements of a respective optical system and independent of the add/drop function (column 4, lines 16-25; column 5, lines 24-37).

Regarding claim 15, Cao discloses that the performing amplitude compensation comprises performing amplitude compensation of at least one of the optical path signals of the optical system (using variable attenuators 335-1...n), wherein for respective ones of the optical path signals of the optical system, the power is set to a specific common value (column 5, lines 24-37).

Regarding claim 7, as similarly discussed above with regard to claim 1, Cao discloses a method of implementing programmable optical add/drop multiplexing (Figures 3A, 3B, and 5), the method comprising;

demultiplexing a respective input WDM optical signal into a plurality of optical path signals each comprising at least one channel (using WDM MUX/DEMUX 320 in add/drop module 10; Figure 3B; column 4, lines 16-57);

performing an add/drop function of selected ones of the optical path signals and establishing through paths of remaining ones of the optical path signals (using switch matrix module 30 (column 3, lines 55-67; column 5, lines 39-67; column 6, lines 1-44);

multiplexing a plurality of optical path signals into an output WDM optical signal (using WDM MUX/DEMUX 320 in the other add/drop module 20); and

performing chromatic dispersion compensation (using dispersion compensator (using dispersion compensator 310 and dispersion compensating fibers 330-1…n), wherein for the output WDM optical signal of the optical system, the chromatic dispersion corresponds to a target value which is suitable for transmission requirements of a respective optical system and wherein the target value is independent of the add/drop function (column 4 lines 26-45; column 5, lines 14-23).

Again, Cao does not specifically disclose demultiplexing and multiplexing a respective WDM optical signal for "each one of N optical systems." However, larger optical networks including multiple WDM signals (each comprising multiple channels) are well known in the art. Furthermore, as already discussed above with regard to claim 1, Danagher et al. teach a programmable optical add/drop multiplexing method (Figure 4) that is related to the one disclosed by Cao, including demultiplexing WDM signals, performing an add/drop function, and multiplexing channels into output WDM signals. Danagher et al. particularly teach

demultiplexing and multiplexing a respective WDM optical signal for each one of N optical systems by using a plurality of the demultiplexing/multiplexing elements 402 accordingly.

It would have been obvious to a person of ordinary skill in the art to include more than one input and output WDM signal (and more than one optical system) as taught by Danagher et al. in the method disclosed by Cao in order to process greater amounts of data on multiple incoming and outgoing fibers/optical systems in a large optical network.

Regarding claim 17, as similarly discussed above with regard to claim 1, Cao discloses a programmable optical add/drop multiplexer (OADM) comprising:

an OADM element (including module 10 and module 20 shown in Figure 3A) comprising a demultiplexer (DeMUX) and a multiplexer (MUX) connected through a plurality of paths, wherein the DeMUX is adapted to demultiplex an input WDM optical signal into a plurality of optical path signals each propagating through a respective one of the paths, and wherein the MUX is adapted to multiplex a plurality of optical path signals into an output WDM optical signal (see Figure 3B; one WDM MUX/DEMUX element 320 is located in module 10 and another MUX/DEMUX 320 is located in module 20; column 4, lines 16-57); and

a plurality of switches 505 (Figure 5) each connected to respective ones of the paths of the OADM element, wherein the switches are adapted to perform an add/drop function of selected ones of the optical path signals of the OADM element and establish through paths of remaining ones of the optical path signals of the OADM element (column 3, lines 55-67; column 5, lines 39-67; column 6, lines 1-44).

Cao further discloses a plurality of variable gain control elements (variable attenuators 335-1…n) adapted to perform amplitude compensation in a manner that the amplitude of the output WDM optical signal is independent of the state of the switches (column 5, lines 25-38).

Again, Cao does not specifically disclose two or more OADM elements each comprising a demultiplexer and a multiplexer. However, larger optical networks including multiple WDM signals (each comprising multiple channels) are well known in the art. Furthermore, Danagher et al. teach a programmable optical add/drop multiplexing system (Figure 4) that is related to the one disclosed by Cao as already discussed above with regard to claim 1. Danagher et al. particularly teach multiple OADM elements each comprising a demultiplexer and a multiplexer, since they teach demultiplexing and multiplexing a respective WDM optical signal for each one of N optical systems by using a plurality of demultiplexing/multiplexing elements 402 accordingly.

It would have been obvious to a person of ordinary skill in the art to include more than one OADM element as taught by Danagher et al. in the method disclosed by Cao in order to process greater amounts of data on multiple incoming and outgoing fibers/optical systems in a large optical network.

Regarding claim 19, as similarly discussed above with regard to claim 17, Cao discloses a programmable OADM comprising:

an OADM element (including module 10 and module 20 shown in Figure 3A) comprising a demultiplexer (DeMUX) and a multiplexer (MUX) connected through a plurality of paths, wherein the DeMUX is adapted to demultiplex an input WDM optical signal into a plurality of optical path signals each propagating through a respective one of the paths, and

wherein the MUX is adapted to multiplex a plurality of optical path signals into an output WDM optical signal (see Figure 3B; one WDM MUX/DEMUX element 320 is located in module 10 and another MUX/DEMUX 320 is located in module 20; column 4, lines 16-57); and

a plurality of switches 505 (Figure 5) each connected to respective ones of the paths of the OADM element, wherein the switches are adapted to perform an add/drop function of selected ones of the optical path signals of the OADM element and establish through paths of remaining ones of the optical path signals of the OADM element (column 3, lines 55-67; column 5, lines 39-67; column 6, lines 1-44).

Cao further discloses optical path length means for reducing effects of coherent cross-talk between the optical path signals (Figures 3A, 3B, and 5 show at least two such paths of approximately equal optical path lengths between the demultiplexing and the multiplexing with equivalent elements in the paths).

Again, Cao does not specifically disclose two or more OADM elements each comprising a demultiplexer and a multiplexer. However, larger optical networks including multiple WDM signals (each comprising multiple channels) are well known in the art. Furthermore, Danagher et al. teach a programmable optical add/drop multiplexing system (Figure 4) that is related to the one disclosed by Cao as already discussed above with regard to claim 1. Danagher et al. particularly teach multiple OADM elements each comprising a demultiplexer and a multiplexer, since they teach demultiplexing and multiplexing a respective WDM optical signal for each one of N optical systems by using a plurality of demultiplexing/multiplexing elements 402 accordingly.

It would have been obvious to a person of ordinary skill in the art to include more than one OADM element as taught by Danagher et al. in the method disclosed by Cao in order to process greater amounts of data on multiple incoming and outgoing fibers/optical systems in a large optical network.

Regarding claim 24, Cao discloses means for chromatic dispersion compensation connected (dispersion compensator 310 and dispersion compensating fibers 330-1…n), wherein the chromatic dispersion of the output WDM signal corresponds to a respective target value and is independent of the state of the switches (column 4 lines 26-45; column 5, lines 14-23).

Regarding claim 30, Cao discloses means for amplitude compensation (amplifier 305 and variable attenuators 335-1…n), wherein the power of the output WDM signal of the OADM element is independent of the state of the switches (column 4, lines 16-25; column 5, lines 24-37).

Regarding claim 33, Cao discloses that the means for amplitude compensation comprises a plurality of VGCEs (variable attenuators 335-1…n) each connected through a respective one of the paths of the OADM element, each one of the VGCEs being adapted to perform amplitude compensation of a respective one of the optical path signals, wherein the powers of the respective ones of the optical path signals are set to a common value (column 5, lines 24-37).

Regarding claims 13 and 31, Cao discloses the performing amplitude compensation comprises performing amplification of the input WDM optical signal of the optical system (using an input amplifier 305 connected to DeMUX 320 as shown in Figure 3B), and therefore, the method and system described by Cao in view of Danagher et al. includes amplifying each one of the input WDM signals of N optical systems. However, Cao in view of Danagher et al. do not

specifically disclose or suggest that the power of the input WDM optical signals of the optical system is set to a common value. However, it would be well understood in the art that the optimal target values of power may be the same for the WDM optical signals. Regarding claims 13 and 31, it would have been obvious to a person of ordinary skill in the art to have common values of power in the method and system described by Cao in view of Danagher et al. in order to more conveniently design and provide the amplitude compensation (since each signal would not have to be adjusted to a different target value).

Regarding claims 14 and 32, Cao in view of Danagher et al. describe a method and system as discussed above with regard to claim 12 and 30 respectively. Further regarding claims 14 and 32, Cao does not specifically disclose performing output amplitude compensation with an output amplifier connected to a MUX. However, Cao already discloses amplitude compensation in the optical communication system, and Danagher et al. further teach that elements for amplitude compensation may be provided in various places in an optical communication system, including at output WDM signals (see amplifier 24 at the output of add drop multiplexer 30 in Figure 1; Figure 2 shows how add drop multiplexer 30 produces an output at the output of a multiplexer element 350; column 4, lines 7-24; column 5, lines 3-28). It would have been obvious to a person of ordinary skill in the art to include output amplitude compensation as taught by Danagher et al in the in the system described by Cao in view of Danagher et al. in order to more accurately maintain the signals at desired target values since output compensation would compensate any additional power loss experienced in the add/drop system itself after the input and path amplitude compensation already disclosed by Cao.

5. Claims 2 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danagher et al. in view of Ishikawa et al. (US 5,602,666 A).

Regarding claim 2, Danagher et al. disclose a method of implementing programmable optical add/drop multiplexing of N input WDM optical signals in an optical system (Figure 4), the method comprising:

demultiplexing each one of the N input WDM optical signals into a plurality of optical path signals each comprising at least one channel (using bidirectional optical multiplexer 402 in a demultiplexing direction; column 8, lines 11-14);

performing an add/drop function of selected ones of the optical path signals and establishing through paths of remaining ones of the optical path signals (using 8 x 8 switching fabric 408; column 8, lines 20-31); and

multiplexing respective ones of the optical path signals into N output WDM optical signals after the performing an add/drop function and the establishing through paths (using bidirectional optical multiplexers 402 in a multiplexing direction).

Danagher et al. do not specifically disclose introducing one or more dead-bands in each one of the input WDM optical signals, wherein one or more of the dead-bands are between two or more of the plurality of optical path signals.

However, Ishikawa et al. teach a related optical communication system including transmitting a wavelength division multiplexed signal with a plurality of channels, and they further teach dead-bands in between two or more of those channels (Figures 2 and 5; column 4, lines 35-67; column 5, lines 1-35; column 16, lines 63-67; column 17, lines 1-23). It would have been obvious to a person of ordinary skill in the art to provide dead bands as suggested by

Ishikawa et al. in the WDM signals of the method disclosed by Danagher et al. in order to advantageously suppress cross-talk (see Ishikawa et al., column 5, lines 35-65, for example) and thereby more effectively transmit the signals through the network.

Regarding claim 18, as similarly discussed above with regard to claim 2, Danagher et al. disclose an optical system (Figure 4) comprising:

a programmable optical add/drop multiplexer (OADM) comprising:

two or more OADM elements wherein each one of the OADM elements comprises a DeMUX and a MUX connected through a plurality of paths, wherein the DeMUX (one of demultiplexing/multiplexing elements 402) is adapted to demultiplex an input WDM optical signal into a plurality of optical path signals, each one of the optical path signals propagating through a respective one of the paths, and wherein the MUX (a corresponding one of demultiplexing/multiplexing elements 402) is adapted to multiplex a plurality of optical path signals into an output WDM optical signal (column 8, lines 11-14); and

a plurality of switches (in 8 x8 optical switch 408) each connected to respective ones of the paths of the two or more OADM elements, wherein the switches are adapted to perform an add/drop function of selected ones of the optical path signals of the two or more OADM elements and establish through paths of remaining ones of the optical path signals of the two or more OADM elements (column 8, lines 20-31).

Although Danagher et al. generally disclose generating the optical signals that are processed through the OADM, they do not specifically disclose a transmitter adapted to generate optical signals each comprising one or more channel wherein channel frequencies at which the optical signals are generated are limited to provide dead-bands.

However, again Ishikawa et al. teach a related optical communication system including transmitting a wavelength division multiplexed signal with a plurality of channels, and they further teach dead-bands in between two or more of those channels (Figures 2 and 5; column 4, lines 35-67; column 5, lines 1-35; column 16, lines 63-67; column 17, lines 1-23). It would have been obvious to a person of ordinary skill in the art to provide dead bands as suggested by Ishikawa et al. in the WDM signals of the system disclosed by Danagher et al. in order to advantageously suppress cross-talk (see Ishikawa et al., column 5, lines 35-65, for example) and thereby more effectively transmit the signals through the network.

6. Claims 5 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao in view of Danagher et al. as applied to claims 1 and 19, respectively, above, and further in view of Ishikawa et al.

Regarding claims 5 and 23, Cao in view of Danagher et al. describe a method and system as discussed above with regard to claims 1 and 19, respectively, including WDM signals, but they do not specifically disclose or teach dead-bands.

However, as similarly discussed above with regard to claims 2 and 18, Ishikawa et al. teach a related optical communication system including transmitting a wavelength division multiplexed signal with a plurality of channels, and they further teach dead-bands in between two or more of those channels (Figures 2 and 5; column 4, lines 35-67; column 5, lines 1-35; column 16, lines 63-67; column 17, lines 1-23). Regarding claims 5 and 23, it would have been obvious to a person of ordinary skill in the art to provide dead bands as suggested by Ishikawa et al. in the WDM signals of the method and system described by Cao in view of Danagher et al. in

order to advantageously suppress cross-talk (see Ishikawa et al., column 5, lines 35-65, for example) and thereby more effectively transmit the signals through the network.

7. Claims 8-11, 25-27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao in view of Danagher et al. as variously applied to claims 7 and 24 above, and further in view of Suzuki et al. (US 6,005,702 A).

Regarding claims 8-11, Cao in view of Danagher et al. describe a method as discussed above with regard to claim 7. Regarding claims 25-27 and 29, Cao in view of Danagher et al. describe a system as discussed above with regard to claim 24.

Regarding claims 8 and 25, Cao discloses that the means for performing chromatic dispersion compensation comprises performing preliminary chromatic dispersion compensation of the input WDM optical signal (with a primary compensator 310 connected to a demux 320 as shown in Figure 3B). Cao in view of Danagher et al. do not specifically disclose or suggest performing slope of dispersion compensation.

However, Suzuki et al. teach an optical communication method that is related to the one disclosed by Cao in view of Danagher et al., including performing chromatic dispersion compensation on a WDM signal (using dispersion compensation element 39; Figure 6) Suzuki et al. further teach including slope of dispersion compensation in addition to chromatic dispersion compensation with a dispersion slope compensation device 43 (column 6, lines 16-67; column 7, lines 1-44)

Regarding claims 8 and 25, it would have been obvious to a person of ordinary skill in the art to include slope of dispersion compensation as taught by Suzuki et al. with the chromatic dispersion compensation in the system described by Cao in view of Danagher et al. in order to

more completely compensate effects of dispersion in the signals and thereby more effectively receive the signals with less distortion/interference.

Cao in view of Danagher et al. and Suzuki et al. also do not specifically disclose or suggest that the input WDM optical signals are set to have common values of chromatic dispersion and slope of dispersion, but it would be well understood in the art that the optimal target values of chromatic dispersion and slope of dispersion may be the same for the WDM optical signals. Further regarding claims 8 and 25, it would have been obvious to a person of ordinary skill in the art to have common values of chromatic dispersion and slope of dispersion in the method described by Cao in view of Danagher et al. and Suzuki et al. in order to more conveniently provide the compensation (since each signal would not have to be adjusted to a different target value).

Regarding claims 10, 11, and 29, Cao discloses that the performing chromatic dispersion compensation comprises performing secondary chromatic dispersion for the optical path signals of the optical system (with secondary compensators 330-1...n connected through the paths as shown in Figure 3B). Cao in view of Danagher et al. do not specifically disclose or suggest performing slope of dispersion compensation.

However, again, Suzuki et al. teach an optical communication method that is related to the one disclosed by Cao in view of Danagher et al., including performing chromatic dispersion compensation on a WDM signal (Figure 6). Suzuki et al. further teach including slope of dispersion compensation in addition to chromatic dispersion compensation with a with a dispersion slope compensation device 43 (column 6, lines 16-67; column 7, lines 1-44).

Regarding claims 10, 11, and 29, it would have been obvious to a person of ordinary skill in the art to include slope of dispersion compensation as taught by Suzuki et al. with the chromatic dispersion compensation in the system described by Cao in view of Danagher et al. in order to more completely compensate effects of dispersion in the signals and thereby more effectively receive the signals with less distortion/interference.

Cao in view of Danagher et al. and Suzuki et al. also do not specifically disclose or suggest that the optical path signals of the optical systems are set to have common values of chromatic dispersion and slope of dispersion, but it would be well understood in the art that the optimal target values of chromatic dispersion and slope of dispersion may be the same for the WDM optical signals. Further regarding claims 10, 11, and 29, it would have been obvious to a person of ordinary skill in the art to have common values of chromatic dispersion and slope of dispersion in the method described by Cao in view of Danagher et al. and Suzuki et al. in order to more conveniently design and provide the compensation (since each signal would not have to be adjusted to a different target value).

Regarding claims 9, 26, and 27, Cao does not specifically disclose performing output chromatic dispersion compensation and slope of dispersion compensation with an output DSCM connected to a MUX. However, Cao already discloses compensating for dispersion in the optical communication system, and Suzuki et al. further teach that elements for dispersion compensation as well as slope of dispersion compensation may be provided at output WDM signals (Figure 6)

Again, it would have been obvious to a person of ordinary skill in the art to include slope of dispersion compensation as taught by Suzuki et al. with the chromatic dispersion compensation in the system described by Cao in view of Danagher et al. in order to more

completely compensate effects of dispersion in the signals and thereby more effectively receive the signals with less distortion/interference. It also would have been obvious to a person of ordinary skill in the art to include output compensation as taught by Suzuki et al in the in the system described by Cao in view of Danagher et al. in order to more completely compensate effects of dispersion in the signals since output compensation would compensate any additional dispersion experienced in the add/drop system itself after the input and path dispersion compensation already disclosed by Cao.

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cao in view of Danagher et al. as applied to claim 33 above, and further in view of Takatsu et al. (US 6,441,955 B1).

Regarding claim 34, Cao in view of Danagher et al. describe a system as discussed above with regard to claim 33, including a plurality of variable gain control elements (variable attenuators 335-1...n), but they do not specifically disclose or suggest that at least one of the VGCEs is adapted to perform a mute function.

However, Takatsu et al. teach an optical communication system (Figure 8) including a WDM signal with a plurality of channels and variable gain control elements (such as variable attenuator 2-1 shown in Figure 8) for controlling the power of each channel. They further teach that the variable gain control element are adapted to mute a particular optical channel (column 13, lines 27-67; column 14, lines 1-7).

It would have been obvious to a person of ordinary skill in the art to provide a mute function as suggested by Takatsu et al. in the VGCEs already disclosed by Cao in the system

described by Cao in view of Danagher et al., in order to shut down a particular channel if errors are detected on the channel so that erroneous signals are not received.

Response to Arguments

9. Applicants' arguments with respect to claims 1, 2, 5, 7-15, 17-19, 23-27, and 29-34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y. Leung
CHRISTINA LEUNG
PRIMARY EXAMINER